(#.) THE QUANTITY OF SLAG.

On the basis of the before-going assumptions, the quantity of slag which must occur under good management on any given charge admits of being ascertained. The final slag consists of:—

(1) Hypothetical silicate slag which originates from the silicon content of the metallic charge;

(2) Phosphate slag, which is formed from the P content of the charge;

(8) Hypothetical silicate slag, which is produced from the silica of the furnace structure; and also

(4) The silica content of all other materials put into the furnace.

It appears possible to derive the amount of the iinal slag from the composition of the charge and the quantity of slag which will be formed under the circumstances mentioned under heading (8). In this connection, however, a circumstance arises which will soon be considered, viz., One has always remarked that silicon, phosphorus and manganese are very rapidly removed, whilst carbon removal throughout requires a longer time. In all cases where the carbon content of the charge is increased, the duration of the heat, and therewith also the wear of the furnace structure is increased, and, indeed, approximately proportionally to this increase. It, therefore, appears admissible to regard the removal of carbon, the product of which, CO, has itself nothing to do with the slag, as of influence on the quantity of the slag, and this occurs most simply (if also not quite free of objection), if one allocates the entire amount of silicate slag which grows from the using up of furnace structure, to removal of carbon.

On this hypothesis, in the case of the complete decarburisa-tion, a final slag is originated as under :—

From each 1 per cent. Si in the charge (from formulae 80 and 40) 2'14x4-78=10-28 per cent. . . . (42) and from each 1 per cent. P (from 88) 5"9 per cent. In consequence of the carbon content of the metal there originates (if from the furnace structure according to (80) there is a total of 0*45 per cent. Si02 in the slag) 0*45X4'78=2'15 per cent. „ . . (48).